REMARKS

Claims 1-24 are pending. Claims 1, 2, 4-7, 9-12, 14-17, 19 and 20 have been amended. New claims 21-24 have been added.

In the June 25, 2004 Office Action, the Examiner objected to the specification because of certain informalities. Applicant has enclosed a substitute specification (as amended) to replace the specification as originally filed to overcome this objection. The substitute specification (as amended) contains no new matter. The Examiner objected to FIG. 2 for having a misspelled word, and FIG. 7A and FIG. 7B for lacking a Prior Art designation. The Applicant has amended FIG. 2, FIG. 7A, and FIG. 7B as shown in red on the attached copy thereof, and substituted the enclosed FIG. 2, FIG. 7A, and FIG. 7B (as amended) for FIG. 2, FIG. 7A, and FIG. 7B as originally filed. The Examiner rejected claims 1-20 under 35 U.S.C. §102(b) as being anticipated by Hurkx et al. (Hurkx et al, "A New Analytical Model Including Tunneling and Avalanche Breakdown" (hereinafter the Hurkx reference). The §102(b) rejection is respectfully traversed.

Independent claim 1, as amended, recites:

An electric characteristic evaluating apparatus for extracting electric characteristics of a semiconductor device by numerically solving physical equations describing physical phenomenon in a semiconductor device comprising:

an integral value calculator configured to integrate a carrier generation and extinction speed obtained in each carrier generation and extinction mechanism by numerically solving the physical equations, in the each carrier generation and extinction mechanism within a semiconductor region, and issue the result obtained by integration respectively.

The Examiner rejected claims 1-20 under 35 U.S.C. §102(b) as being anticipated by the Hurkx reference.

Applicant respectfully submits that the Hurkx reference teaches that the diode current density J_d can be found by equation 8 on page 2091. Equation 8 shows the diode current density J_d includes J_{np} and J_{pn} the ideal electron and hole current densities due to recombination in the neutral p and n regions, respectively. J_{np} and J_{pn} the ideal electron and hole current densities are not obtained by integration.

The Hurkx reference does not disclose, teach, or suggest the apparatus specified in independent claim 1, as amended. Unlike the apparatus specified in independent claim 1, as amended, the Hurkx reference does not show that "**an integral value calculator** configured **to integrate a carrier generation and extinction speed obtained <u>in each</u> carrier generation and extinction mechanism** by numerically solving the physical equations, **<u>in the each carrier</u> generation and extinction mechanism** within a semiconductor region, and **issue the result obtained by integration respectively**."

Accordingly, Applicant respectfully submits that independent claim 1, as amended, distinguishes over the above-cited reference. Claims 2-5, and 22 depend directly from independent claim 1, as amended. Therefore, Applicant respectfully submits that claims 2-5, and 22 distinguish over the above-cited reference for the same reasons as set forth above with respect to independent claim 1, as amended.

Applicant notes that amended claims 6, 11 and 16 recite limitations similar to claim 1, as amended. Specifically, amended claim 6 recites " integrating a carrier generation and extinction speed obtained <u>in each carrier generation and extinction</u>

mechanism by numerically solving the physical equations, in the each carrier generation and extinction mechanism within a semiconductor region; and issuing the result obtained by integration respectively." Amended claim 11 recites "instructions configured to integrate a carrier generation and extinction speed obtained in each carrier generation and extinction mechanism by numerically solving the physical equations, in the each carrier generation and extinction mechanism within a semiconductor region, and issue the result obtained by integration respectively." Amended claim 16 recites "integrating a carrier generation and extinction speed obtained in each carrier generation and extinction mechanism by numerically solving the physical equations, in the each carrier generation and extinction mechanism within a semiconductor region, and issuing the result obtained by integration respectively ". Therefore, amended independent claims 6, 11 and 16 also distinguish over the above-cited reference for the same reasons as set forth above with respect to independent claim 1, as amended.

Claims 7-10, 22 depend, directly or indirectly, from amended independent claim 6, claims 12-15, and 23 depend, directly or indirectly, from amended independent claim 11, claims 17-20, and 24 depend, directly or indirectly, from amended independent claim 16. Therefore, Applicant respectfully submits that claims 7-10, 22, 12-15, 23, 17-20, and 24 distinguish over the above-cited reference for the same reasons as set forth above with respect to independent claim 1, as amended.

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Applicants believe that the foregoing amendment and remarks place the application in condition for allowance, and a favorable action is respectfully requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the examiner believe that such a telephone conference would advance prosecution of the application.

Respectfully submitted,

PILLSBURY WINTHROP LLP

Date: November 24, 2004

By: [signature]

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IN THE DRAWINGS:

Please amend FIG. 2, FIG. 7A, and FIG. 7B as shown in red on the attached copy thereof, and substitute the enclosed FIG. 2, FIG. 7A, and FIG. 7B (as amended) for FIG. 2, FIG. 7A, and FIG. 7B as originally filed.

PRIOR ART

FIG. 7A $$\frac{\delta n}{\delta t} = \frac{1}{q}\vec{\nabla} \cdot \vec{J}_n + GR_n$$

PRIOR ART

FIG. 7B $$GR_n = GR_{SRHn} + GR_{IIn} + GR_{BBTn}$$

FIG. 7C $$A_{SRHn} = \int_{Si} GR_{SRHn} dv$$

FIG. 7D $$A_{IIn} = \int_{Si} GR_{IIn} dv$$

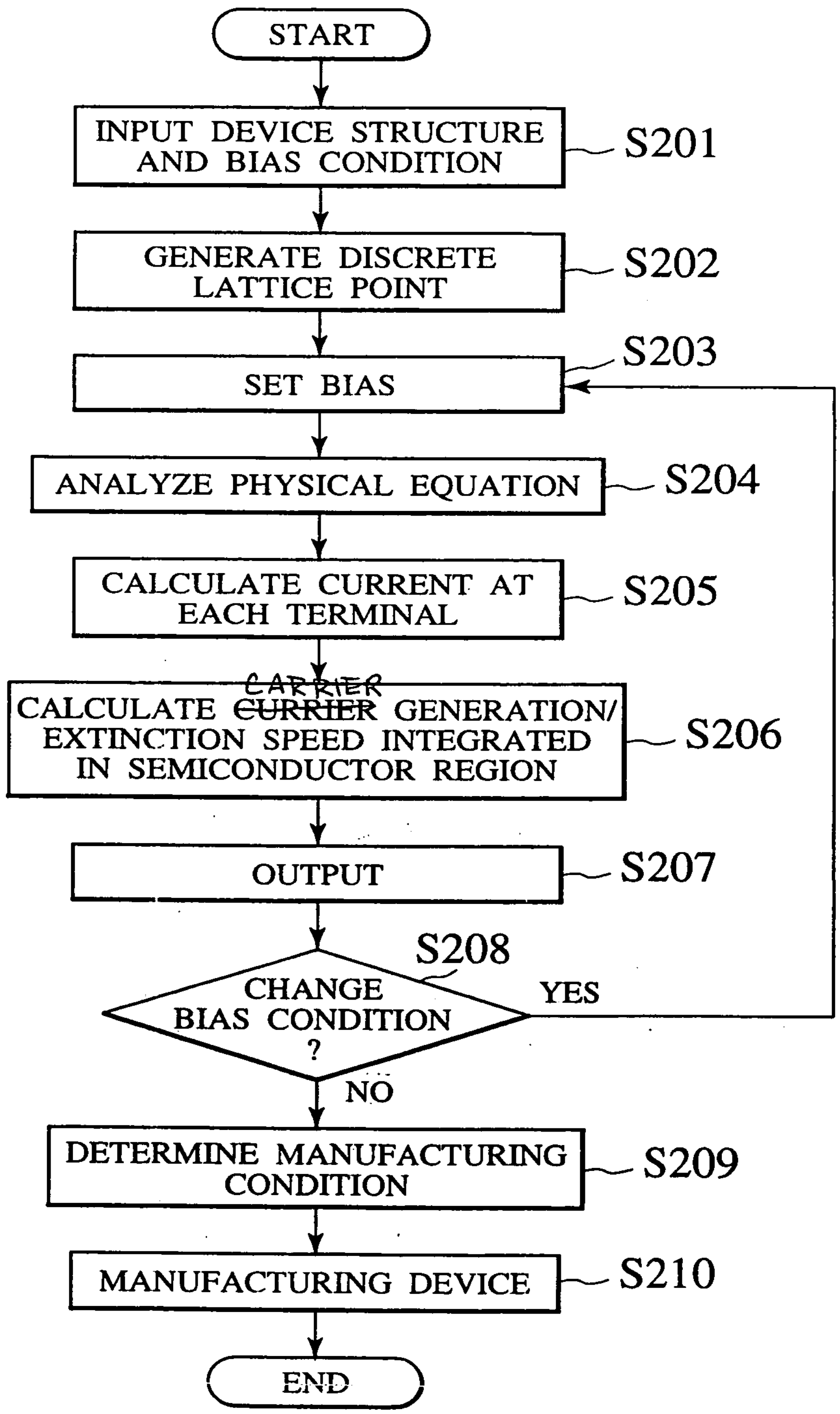
FIG. 7E $$A_{BBTn} = \int_{Si} GR_{BBTn} dv$$

FIG. 7F $$J_{SRHn} = q \int_{Si} GR_{SRHn} dv$$

FIG. 7G $$J_{IIn} = q \int_{Si} GR_{IIn} dv$$

FIG. 7H $$J_{BBTn} = q \int_{Si} GR_{BBTn} dv$$

FIG. 2


START
INPUT DEVICE STRUCTURE AND BIAS CONDITION
S201
GENERATE DISCRETE LATTICE POINT
S202
SET BIAS
S203
ANALYZE PHYSICAL EQUATION
S204
CALCULATE CURRENT AT EACH TERMINAL
S205
CARRIER
CALCULATE ~~CURRIER~~ GENERATION/ EXTINCTION SPEED INTEGRATED IN SEMICONDUCTOR REGION
S206
OUTPUT
S207
S208
CHANGE BIAS CONDITION ?
YES
NO
DETERMINE MANUFACTURING CONDITION
S209
MANUFACTURING DEVICE
S210
END